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THE POOR RELATION

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THERE is ample evidence that from the very earliest times teeth were subject to disease and injury, and since teeth are the most indestructible organs of the body, these often supply the only remaining evidence of prehistoric life, and carry us back the furthest in time.

In the National Museum at Ottawa there are skeletal remains of an herbivorous dinosaur, estimated to be a hundred million years old, which show evidence of dental caries. And in Europe remains of early pleistocene cave-bears show signs of both dental decay and periodontitis, that is, disease of the supporting structures of the teeth. The forerunners of early man have similar signs of dental troubles. For example: the java remains found in 1894 by Eugen Dubois consist of a jaw with two molars and a premolar, as well as other bones of the skull. These are judged to belong to the Pleistocene Age, some five hundred thousand years ago. The teeth here are ape-like, large with five or six cusps and the roots of the molars spread out. The Heidelberg skull is similar, but of a more distinctly human type; in both these the teeth are much worn down—the result of attrition.

Coming to comparatively recent times, the Old Man of La Chappelle, who lived only some thirty thousand years ago, must have had severe dental trouble; he had lost practically all his molars, and it is thought that this may have been due to excessive attrition, leading to pulp exposure and consequent infection, and so resulting in periodontitis. In England, a Neanderthal skull found near Tilbury has all the lower molars missing as a result of disease, and we know that extinct Tasmanian people, and early Australian aborigines, were subject to both dental caries and periodontitis. More exact knowledge is, however, gained from Egyptian skulls, where the custom of embalming and burying the dead has provided a wonderful store house, and it would appear from examination of

quantities of these remains that caries and periodontitis were common at all times. Alveolar and perialveolar abscesses, the result of chronic suppurative periodontitis, were the most usual causes of the loss of teeth.

In all early man attrition was a prominent feature which can be readily understood when we consider the rough character of the food he ate, and its frequent contamination with grit and sand. A remarkable example of this is the Pecos Indians, who had an isolated existence in a valley of the Pecos River in New Mexico. The tribe was founded about A.D. 1100 and remained undisturbed for many hundreds of years. These people had an excellent muscular development, their food consisting of raw fruits and vegetables, and corn ground in soft stone mortars, from which a fine stony grit was detached. When the skeletons of these Indians were examined, attrition to a marked degree was found in 97 per cent. of the skulls, caries in about 48 per cent., and loss of one or more teeth in 47 per cent. The caries was mainly occlusal, the result of wear. It may be said that there has probably never been a period in which man did not suffer from dental disease, to a greater or less extent.

It is only natural that man suffering from any pain or sickness would seek to alleviate the pain and cure the ailment. Those ills which resulted from an obvious cause, such as a blow or a fall, were easy to understand, but many other painful conditions or illnesses, for which there was no obvious cause, presented him with a problem, and these early peoples, not understanding the reason, attributed the disease to outside influences, such as storms, earthquakes, floods, etc. These forces came to be associated with gods or demons possessing human emotions, as hate, fear or love. They were often malevolent and worked their spite on human beings, consequently the obviously proper thing to do was to placate them in some way, and persuade them, if possible, to act benevolently and to disarm their hostility. Some members of a community would have more skill than others in this direction, hence the rise of the Medicine Man almost always associated with the current religion of the people. Since, as I have said, dental illness dates from earliest times, it was not dissociated from any other form of ill, either in the mind of the sufferer or of the physician, and until comparatively recently medicine and dentistry walked hand in hand. It is curious how this idea of magic has persisted in varying and disguised forms to the present day. We are all familiar with the wearing of amulets and charms, and in earlier days teeth were often chosen, as they were supposed to give protection to the wearer, or to ward off the evil eye, and in certain circumstances, if the teeth were those of an animal, to convey to the wearer the physical properties of that animal, such as strength, courage or guile. Later they became popular as religious relics.

Saint Appolonia was a lady of advanced age, who lived in Alexandria in the year A.D. 249. She became a Christian and, in consequence, was imprisoned and tortured, her teeth being broken off and the roots extracted. During her torture she prayed for all suffering from toothache, and asked the Lord that any such person invoking Him in her name should be relieved. Later she was publicly put to death. She was adopted as the Patron Saint of Dentistry, the story gradually changing, and she became a young and beautiful maiden, the daughter

of a senator, and as such she was usually depicted in pictures and in shrines erected in her honour. Her teeth were treasured as holy relics, but it is said that when King Henry VIII ordered the collection of these (with other relics) they then numbered well over a thousand.

Saint Appolonia's teeth were not the only ones regarded with veneration; one tooth in particular is revered to this day, the Holy Tooth of Buddha, brought to Ceylon in A.D. 311, after being treasured in India for over eight hundred years. Those Europeans, who claim to have seen it, say that it is a bicuspid, and much larger than a normal tooth.

The progress of the evolution of medicine and dentistry has varied much in different centres of civilization. Sometimes it has risen, sometimes it has fallen back again, and sometimes it has been almost lost. Consequently it is not easy to trace it in a general manner, but rather in reference to different areas. Its progress varied from place to place, depending on the relative development of the locality, but it all occurred within the boundaries of the ancient world, India, and China.

About 2350 B.C. the Semitic Empire was established with Babylon as its capital and the chief city of that whole area. In Babylon, in 2100 B.C., reigned Hammurabi, who had the laws of the country engraved on a stone pillar, "The Code of Hammurabi." It contained, amongst other commands, established fees for physicians, and provided suitable punishment for unskilful or unsuccessful treatment. This must be a severe blow to the National Health Services Board, who imagined they had thought of it first.

Hammurabi also writes that, "if anyone knock out the tooth of an equal, his tooth shall be knocked out," which corresponds very much with the Hebrew law of "An eye for an eye, and a tooth for a tooth." In the same country inscribed on cuneiform tablets, compiled by the priests, are various prescriptions, and amongst them one for the cure of toothache; it gives directions for calling down the wrath of a particular god, on the worm, driving it out of the tooth, and it is remarkable how the worm theory persisted even to the seventeenth century. In Babylonian legends the worm was the enemy of the sun, and it may be that what was originally an evil spirit subsequently became identified as a physical entity.

On the other side of the civilized world was the land of Egypt. The Egyptians, unlike the Babylonians, were not a warlike people, and turned their attention largely to the arts of peace. They discovered how to make a kind of paper from a reed called papyrus, and to write on it. Many of these writings have been recovered from the tombs. The most important, from our point of view, was the Ebers Papyrus, discovered in 1875. It is now in the University of Leipzig, and it contains the oldest and best preserved writings on medical and dental subjects. There is no special chapter on dental disease, but remedies for tooth affection are found scattered amongst other prescriptions, showing that dentistry was regarded as part and parcel of medicine, and that the Egyptians suffered much from dental diseases.

The examination of thousands of mummies would seem to establish that the Egyptians made no attempt in any way at filling teeth, or replacing lost teeth; nor, indeed, do they seem ever to have extracted painful teeth. They believed that illness was the result of Divine displeasure and, consequently, prayers, magic, and incantations were much to the fore, in addition to therapeutic remedies. Much later in Egyptian history Herodotus, in 500 B.C. when he visited the country, states that it was full of physicians, one treating of the head, another of the eye, another of the teeth, and another of the internal organs, so it would appear that there was a form of specialization then, though all combined under the one general heading.

Medicine in India was founded on principles laid down in the Vedas, ancient Sanskrit writings of the Hindus. This system of medicine, improved and enlarged, has remained in operation until very recently, and is still practised by many. Not very long ago, in Benares University, a Chair of Ayurvedic Medicine was established. One of the ancient laws then enacted, and still current, requires that the teeth be cleaned as a daily ritual. Any of you who have been to that country will be familiar with both the sight and sound of this being carried out. Very often a twig of the Neem tree is used, first chewed till it has a fibrous end; it has a slightly astringent taste, and makes a very creditable toothbrush, which I have tested for myself. The more modern and rather objectionable habit of chewing betel nut is also said to benefit the teeth, as the nut is astringent and stimulates a flow of saliva, and the lime with which it is made up is of course alkaline.

Turning to another ancient people, medicine and hygiene were bound up with the religious laws amongst the Jews. Teeth are frequently mentioned in the Bible, numerous references will I hope occur to all of you, and even more specifically in the Thalmuds of Jerusalem and Babylon. Oral health was held to be important, and to have a special significance. We read in one record, where it states that if a man married a woman on condition that she was free from physical faults, and afterwards it transpired that she had a bad breath, the marriage was not valid. Various remedies are prescribed for the relief of dental pain, honey, spices, garlic and vinegar. This last was good for bad teeth, but bad for good teeth.

Medicine in Ancient Greece was in the hands of the priests; then, in the fifth century B.C. came Hippocrates with his more rational approach to disease, its cause and treatment. In his works there are frequent references to dental physiology and embryology. He knew that the development of the teeth began before birth, and that at their eruption a child may have convulsions. He speaks of drawing teeth with pincers, and treating fractures of the jaw by binding together proximal teeth with gold wire or linen thread.

In the Medical School of Alexandria it was noted that death could follow the extraction of a number of teeth, and it would seem that treatment of the mouth was regarded as a normal part of medicine.

Good teeth were esteemed by the Romans, as a sign of health and vigour. A Roman was ridiculed a Patrician dandy, who picks his toothless mouth with a

tooth-pick, to give the impression that he is not too far stricken in years. And certain wealthy families often employed special slaves to clean their mouths with small sticks of mastic wood, and evergreen common along the shores of the Mediterranean. So, it would appear that oral hygienists are not so new. Nor were false teeth uncommon amongst the well-to-do, to quote from one writer: "She lays down her false teeth at night, as she does her silken robe." And Horace writes (Ode 5, Book 5): "You would have laughed to see those two old witches run towards the Town, losing in the flight, Canidia her false teeth, and Sagana her false hair."

It is probable that medicine was introduced to Rome by the Greeks, where in the first century there flourished one Aurelius Cornelius Celsus. He wrote much, and in one book, "De Medicina," which is preserved, he deals at considerable length with dental diseases, and gives a definite plan of treatment for ulcers of the mouth; he believed that oral disease could have a systemic background. He regarded toothache as amongst the worst of tortures and prescribed a mixture of castoreum, cinnamon, mandrake and poppy, to induce sleep in the sufferer. This, of course, he did not consider a cure, but only a sedative, and further states that the patient should abstain entirely from wine, and use the teeth sparingly in mastication.

Pliny the Elder was not so scientific, and his writings were based not on his own observation but on ideas derived from various other sources; he says that some believe that toothache can be prevented by eating a mouse twice a month. He states that a man has thirty-two teeth, and women less, following the idea originated by Hippocrates, and that the best dentifrices were the ashes of the head of the wolf, or the hare, or mice, or better still, the feet of a goat. It was currently held that caries was caused by small worms which ate into the body of the tooth, and this idea persisted, as I have said, until the seventeenth century. There can be no doubt that the Romans suffered much from dental disease. Many remedies were prescribed by physicians, and at the same time craftsmen made bridges, crowns and dentures. But as the people grew more corrupt and indolent, the Empire and its technical progress fell before the barbarian hordes from the North.

Christianity was the predominant force at the time of the destruction of the Roman Empire, but its immediate temporal application did not seem to work out. The meek did not inherit the earth, and the new faith did not lighten the burden of the heavy laden. So in time the idea penetrated that the promised peace was not for here, but the hereafter, and, swinging to the opposite side of the pendulum, all emphasis was put upon the soul, and undue attention to the body became a sin of the flesh, jeopardising one's entrance to Heaven. The hermit, who never took a bath and lived in a cave, became the most respected of citizens and this attitude persisted for nearly a thousand years, during which dentistry almost became a lost art. Why, under the circumstances, should one bother as to whether one's teeth decayed or not, when there were much more important matters of the soul and its care to contend with? The Church also frowned on any ideas outside its strictly limited philosophy.

After the birth of Mohammed, his followers set out to conquer and spread their religion by force, and at the height of their religious zeal sought to destroy all evidence of culture, and civilization in subjugated countries. But realising the folly of this course, certain Caliphs had the medical literature of Greece, India, and Persia translated into Islamic languages. One in particular, El Hakim II of Cordova, is said to have had a library of six hundred thousand books; he sent envoys all over the known world to act as copyists, and it is due to this that much has been preserved, though the Arabians themselves added little new to what was already known.

Dentistry, at the end of the Dark Ages, was practised both by the scientific and the ignorant, for one writer speaks of impudent and audacious barbers, who frequently did great harm by their practices. Even as early as this, there was conflict between the physicians, and the surgeons and barber-surgeons, whom the former looked down upon. At this time, oral ailments were largely treated by doctors of medicine, and the surgeons and barber-surgeons dealt with the surgical part of dentistry, while in addition there were itinerant tooth drawers, who plied their trade in the fairs and market places, all contributing something to the advancement of dental knowledge.

The Renaissance may be said to have come first in Italy with the skill and work of the almost legendary Leonardo da Vinci, who led a life of unparalleled variety, and yet, who touched nothing that he did not adorn, including the arts and medicine. Towards the end of Leonardo's life was born Andreas Vesalius, a famous Belgian anatomist, who attempted to point out the errors of Galen, but his task was not easy, as the medical profession at that time was steeped in ignorance and superstition. In Paris they called him a madman, and persecuted him; fortunately, the University of Padua in Italy was more enlightened, and asked him to occupy the Chair of Anatomy.

Padua was, at that time, a part of the Venetian Republic, where the Papal Authority was powerless to interfere in affairs of the school, and anatomical dissections in Padua were therefore possible, unhampered by fears of the Inquisition. There Vesalius published his famous work, correcting many of Galen's errors, and Hippocrates' statement of the difference in number between the teeth of men and women, pointing out that no one is prohibited from counting his own teeth. It is said that his attention was particularly directed to the eruption of the third molar, as at the time of writing he suffered intensely from an impacted wisdom tooth. As well as counting the teeth, he also counted the ribs, and exploded the myth that man had suffered any physical loss in the Garden of Eden. He accepted a position as physician at the Court of Spain, but here dissection was prohibited under pain of death. Performing an autopsy on a nobleman, who had just died, he was accused by onlookers of murder, and his life was only spared on the intervention of the King, but he had to leave and go on a pilgrimage to Palestine as a penance.

The present position of dentistry in Italy is that no one is permitted to practise who has not obtained a Diploma in Medicine.

In France, Ambroise Pare, about 1525, commenced in a humble way, as an apprentice to a barber-surgeon. Subsequently becoming a Doctor of Surgery, he rose to the position of Chief Surgeon to the Court in the reigns of Charles IX and of Henry IV. Although a Protestant, his life was spared at the Massacre of Saint Bartholomew in 1572, through the intervention of Charles IX. He believed also that decayed teeth had worms in them, and advised extraction, or treatment with vitriol and caustics.

In France in 1678 there was born Pierre Fouchard, who may be called the father of modern dentistry. He entered the Navy as a student surgeon, later turning to dentistry, and in 1723 published his famous book, "The Surgeon Dentist," or "Treatise on the Teeth." He definitely disposed of the worm theory, and was probably the first to use the term "Dental Caries."

In 1614 and 1699, laws were enacted, placing the dentist on the same level as the oculist, and the bone setter, but, following the Revolution of 1792, an edict was promulgated, abolishing all restrictions on professions and trades. This, however, was soon found not to be a very good idea, and after much agitation, restrictive laws were passed, which became effective in 1892, when definite regulations for examinations were set forth, with conditions of practice for medicine, dentistry, and midwifery.

Time does not permit of more than a passing reference to dentistry in other countries.

When the "Mayflower" sailed for America, with the Pilgrim Fathers, we know that numbered amongst the company were several physicians, an apothecary, and three barber-surgeons, but there is little authentic dental history available, for quite a time after their landing. However, in 1749, the following advertisement appeared in the "Independent Advertiser," Boston: "Sieur Roquet of Paris announced that he cures effectually the most stinking breaths by drawing out and eradicating all decayed teeth and stumps, and burning the gums to the jaw bone, without the least pain or confinement, and putting in their stead an entire set of right African ivory teeth, set in rose-coloured enamel, so nicely fitted to the jaws, that people of the first fashion may eat, drink, swear, talk scandal, quarrel and show their teeth, without the least indecency, inconvenience or hesitation whatever. He deals only for ready money with the Quality and Members of Parliament, but will give reasonable credit to tradesmen and gentlemen of the Inns of Court."

Following this, there is little note of dentistry, till we hear of John Barker of Boston. Paul Revere, famous for his ride, was a pupil of his. Barker himself was a dentist of George Washington's, though indeed that great man had in all seven dentists, in spite of which he had much dental trouble, and eventually lost all his teeth. Considerable correspondence is preserved regarding his various dentures. He was one of the first people to have dentures equipped with springs. George Greenwood, another of George Washington's dentists, might be regarded as the father of American dentistry.

The University of Maryland was given authority in 1805 to license dentists and oculists, by examination, and a Dr. Hayden gave lectures in dental surgery

to medical and dental students. He was also in part responsible for founding the Baltimore College of Dental Surgery in 1840. This College granted a Doctorate in Dental Surgery under State Charter, and this has been the pattern of dental education in America ever since. Unlike Great Britain, it was entirely separate in control and government from medicine. In another way also it differs, for the primary and qualifying degree is a doctorate, which left it little scope for further qualifications. In time, recognizing this drawback, supplementary courses of study have been instituted, with certificates granted by various bodies.

Dentistry progressed very rapidly in America, partly due at least to tooth consciousness on the part of the population, and their willingness to spend freely to have their mouths kept in order. A colleague, recently returned, tells me that a family he knew paid \$10,000 over a period of five years, to have their daughter's teeth regulated.

There is little information regarding dentistry in Russia, prior to the revolution. Many of the dentists then practising in Moscow and Leningrad had qualified in France, Germany or America, but the present position is interesting.

In 1935 a new category called stomatologist was introduced to take the place of dentists, and became part of the general medical establishment. Under this system all students take first a common two-year course in the basic sciences, then branch into whatever speciality they intend to pursue, such as general medicine, pædiatrics, or stomatology, and when completed each has the general classification of doctor. It is interesting to note that in their specialization years the stomatologists take courses in general medicine, surgery, and obstetrics, and attend clinics in all other branches.

This means that in time all dentists will disappear and be replaced by stomatologists. The present ratio is 24,000 stomatologists to 12,000 dentists. Four years ago the proportions were in reverse. Last year 1,600 students graduated as stomatologists, and they hope to increase this number to 2,200 per annum, in five years' time. It is remarkable that whereas in this country dentistry seems to be, as in America, gradually disassociating itself from medicine, in Russia it has become a completely integrated speciality.

For this information I am indebted to Mr. Whitlock, who has just returned from a visit there, under the auspices of the World Health Organisation. In the institute in Moscow where he was he tells me that work started at 9 a.m. and continued without interruption or break until 5 p.m. or 5.30 p.m., so he soon learned to take a good breakfast. Think of the consternation that would reign in the Royal Victoria Hospital if the morning coffee break, let alone the lunch interval, were abolished.

In Great Britain a Company or Guild of Barbers was formed in 1309, and references are found concerning the admission of tooth-drawers. Even at a very early stage it was evident that some departed from accepted standards, for in 1416 we find certain trustworthy and discreet barber-surgeons complaining of unruly members who, inexperienced in the act, take sick persons under their care, and then go off with their goods.

Official recognition was obtained in 1461 when a company of barber-surgeons was first incorporated by Edward IV, divided into two classes—those who practised barbery or bloodletting and those who practised tooth-drawing. This company was dissolved in 1745, and the extraction of teeth, regarded by surgeons as dangerous, handed over to the ignorant and unqualified. There is a story that Queen Elizabeth I, grievously troubled and unable to sleep or to obtain any relief from an aching tooth, eventually called in her physicians, who urged that it must be extracted, to which procedure she was very much averse. However, the Bishop of London, who was present, encouraged her, saying that it was not so bad, and as an evidence he had one of his own teeth removed, in her presence, which gave the Queen the necessary fortitude to have hers extracted. It is said that James VI, of Scotland, and first of England, engaged in the practise of extracting teeth, much as a recreation. An entry, which is referred to in the town records of Edinburgh, reads:

“Item paid to ane fellow, because the King pulleth his tooth—18 shillings.”

“Item to Kinnard the Barber for two teith drawn furth of his head, by the King—18 shillings.”

Fortunately the precedent set by the King, of the operator paying the patient, has not been generally followed.

It may be added that the present Duke of Edinburgh became an Honorary Member of the British Dental Association a couple of years ago.

The first book in English entirely devoted to dentistry was written by Charles Allen, and published in 1685; the second and third editions of that work were published in Dublin in 1687.

Dentistry in Great Britain did not progress as on the Continent, and up to the eighteenth century was largely in the hands of the unqualified, but when the middle of the century was reached dentistry was beginning to be recognised as a profession, whose practice required a special knowledge and skill. John Hunter, Surgeon to St. George's Hospital, published in 1771 his natural history of the teeth. He refuted the theory that teeth grew continuously, and lifted dentistry to a more scientific plane.

About this time dentures were made of bone or ivory, carved and let down to fit the contours of the gums, the front teeth, attached, being human teeth, if obtainable, but the demand far exceeded the supply, and the resurrectionists, having disposed of the bodies of their victims to the anatomists for dissection, sold the teeth to the dentists. During the Peninsular War the Continent was the great source of supply for dentists, certain gentlemen following the armies for no other purpose than to extract teeth from those that were killed, or wounded so badly as to be unable to resist.

At home the destitute often sold their teeth directly to dentists. Indeed, Miss Hawkins states in her memoirs that Emma Hart, afterwards Lady Hamilton, in a state of destitution, was on her way to sell her fine set of teeth when she met an old fellow-servant, who launched her on a more lucrative, if less honourable, method of improving her finances. (Are teeth more important than virtue?)

Teeth were extracted by forceps, or more often by a rather brutal but very effective instrument known as a key. As time moved on, the more reputable practitioners were filled with a desire to remedy the state of affairs then existing, and in 1841 George White, a Member of the Royal College of Surgeons, issued an appeal to Parliament to nominate a board from the dental members of the College, to examine the fitness of those proposing to practise dentistry, to grant a diploma or licence, and to prohibit unlicensed practice. Nothing, however, came of this, which, as Sir Wilfred Fish remarks, was a great pity, since that was exactly what did happen, only it took nearly twenty years to get the diploma, and eighty years to get prohibition of unqualified practice. But further stimulus came for the publication of lectures on dental physiology and surgery in 1841 by Sir John Tomes.

In 1857 the College of Dentists and the Odontological Society were formed, and between them a controversy arose, the Society advocating that dentistry be retained as a branch of medicine, and the College of Dentists wishing it to be an independent profession. This delayed matters, but eventually the Society, though the smaller, triumphed, and in 1859 a Charter was granted to the College of Surgeons empowering them to institute examinations and give certificates of fitness to practise dentistry.

It was hoped by some who had been instrumental in obtaining this Charter that dentistry would become a specialized branch of medicine, and holders of the Diploma placed on the Medical Register. However, this did not materialize. It remained a faculty, and is indeed still the senior faculty, but holders of the Diploma were not on the Medical Register. It is a curious fact that the very Act into which this Charter was inserted was that establishing the General Medical Council, which had control of the Medical Register and of the standards of medical education, and, consequently, also of dental education.

Now at the time of the Act there were no specialized branches of medicine, and no provision for any such specialized representation on the Council (nor is there any yet, so far as I know). Members of the Council were drawn from medical authorities, and from the Medical Faculties of the Universities. There was no provision for any dental member, and indeed there was none until 1898, when Sir Charles Tomes was appointed by the Privy Council to advise on dental matters.

Thus there was the rather anomalous situation of the General Medical Council, which would not admit dental licentiates or graduates to the Medical Register, yet retained control of dental education and the dental curriculum. It was not surprising that the same pattern was observed by the other colleges and universities. Where dental schools were established these were placed under the direction of the Dean of the Medical Faculty. (And perhaps we have been fortunate in this respect in Belfast.)

As I have said, this Charter did not provide for any registration, and a very unsatisfactory state of affairs continued, but subsequent to the union of the two dental societies the Dental Act of 1878 was passed and a Register opened, which again was placed in the hands of the General Medical Council.

Under the same Act the Dental Board was set up to advise on the purely dental side of dental education, but they still had to work indirectly through the General Medical Council, which retained control of the dental curriculum, and so it was until 1956, when the newly established General Dental Council took over, which is now responsible for the Dental Register and dental education. We are left again with a rather odd situation, that, whereas the surgeons, physicians, ophthalmologists and gynæcologists all have colleges of their own, and are under the General Medical Council, the dentists are under their own General Dental Council, but have no college.

The Charter of 1859 did not provide for registration or prevent any unqualified from practising, and in 1878 the Dentists' Act referred to previously was passed, which provided for registration of the Licentiate Dental Surgeon and prohibited the use of the terms "Surgeon Dentist" or "Dental Surgeon," by other than those who were on the Medical or Dental Registers.

This Act was unfortunately full of loopholes, and only prevented the use of specific descriptions, and a plate bearing the words "Dental Surgery" did not look very different to the words "Dental Surgeon" to the unobservant general public. The number of unqualified practitioners grew, and many acquired a high degree of professional skill and ethical conduct. It was found the position could not be altered by any enforcement of the 1878 Act, so in 1921 another Dental Act was passed, permitting any who for five years could show that dentistry had been their main source of livelihood, to be placed upon the Register, which was finally closed, and from thence forward practice was prohibited, save for those whose names were on the Medical or Dental Register, or who gained admittance thereto, by passing the prescribed examinations.

During the formative years dental schools were springing up all over the country, the Edinburgh Dental School in 1850, the Glasgow Dental School, associated with the University of Glasgow in 1879, the Incorporated Dental Hospital in Dublin in 1879, and the Dental School in 1884. It is remarkable that a dental school connected with Guy's Hospital was not established until 1889, though Mr. Joseph Fox was appointed dental surgeon to the hospital in 1799, a hundred years previously. Numerous other schools were established all over the country, and in the memory of many of us our own dental school was established in Belfast, in 1920, and degrees and diplomas issued by Queen's University.

In the years immediately following the establishment of the Dental School at Queen's there have been many advances and changes in the practice of dentistry, both at home and abroad. When I first came to Belfast much of the current oral surgery was undertaken by surgeons or surgeons in conjunction with dentists, many of whom, I am glad to say, are still with us, Sir Samuel Irwin, Mr. Loughridge, Mr. Frazer, Mr. Malcolm and others, to all of whom I would like to pay tribute.

But the establishment of the Facio-Maxillary Unit, towards the end of the First World War, at East Grinstead, has, I am glad to say, led to the training of many dentists in this particular branch, so that now dentists specially trained and qualified to deal with almost every surgical condition affecting the mouth

and associated parts are to be found in every district of the country, and they, in their turn, have enlisted and established a close liaison with dentists skilled in prosthetics, who make the necessary splints and dentures to replace lost tissues.

About the same time orthodontics, as a distinctive branch of dentistry, began to emerge. For a long time it had been known that movement of teeth through the bone to new positions could be affected by gradual pressure, but such attempts as had been made were only to the front teeth, and for cosmetic reasons.

At the beginning of this century an American dental surgeon, Edward Angle, stressed the fact that the dental unit consisted of thirty-two teeth functioning as a whole, and that, in considering any irregularities, the whole unit must be taken into account. He devised mechanisms, whereby all teeth could be moved, and upheld the view that every tooth could be brought into alignment, and that extractions to provide extra space were unnecessary.

Much study and research was stimulated in an ever-growing number of dentists interested in this particular field, and the present position is that Angle's views are in the main outdated, and it has been established (although Professor Nord of Denmark maintains that a large proportion are due to thumb-sucking and kindred activities on the part of young children), that irregularities and malocclusion are basically developmental in origin, and there are times when a quart will not fit into a pint pot.

Thirty years ago the only practising orthodontist in Northern Ireland was Mr. H. T. A. McKeag, and we have been exceptionally fortunate to have had such a person for, as opportunity presented, he and his successor, Mr. Philip Adams, have been instrumental in building up an Orthodontic Department in Queen's and the Royal Victoria Hospital, second to none in the United Kingdom, and orthodontic treatment through them and those they have trained is available to the whole province.

In the field of anæsthetics perhaps the inter-relationship of dentistry and medicine is best demonstrated. Through the ages man had sought for some means of alleviating pain, and pain in the teeth has been described by an early writer as the worst of tortures. In this search many methods have been used to prevent or minimise pain, the ancients were familiar with narcotic drugs, opium, Indian hemp, hemlock and the root of the mandrake, which was steeped in wine and the patient drank until stupor overcame him, but, unfortunately, when used within the limits of safety, pain was always present, and, when pushed to complete unconsciousness, the risk of death was very great. Ether itself was probably discovered in the thirteenth century, and a travelling apothecary, Velerious Cordus, in 1515-1544, described the method of preparing ether, while Joseph Priestley in 1733-1804 isolated amongst other gases nitrous oxide, and used it in the treatment of certain diseases. But in spite of the long knowledge of the existence of ether and method of preparation, it was not until 1842 that a physician, Crawford Long, attending an ether party, conceived the idea that sufficient administration of the vapour might be given to perform an operation without pain. He did indeed undertake several successfully, but let the idea drop and pressed it no further. On the contrary, a young dentist, Horace Wells,

deriving his inspiration from the same source, together with another dentist, William Morton, demonstrated conclusively that there now existed a method whereby pain could be obviated during the extraction of teeth and, of course, in other operations. A Dr. John Snow of London is stated to be the first physician to make a speciality of the administration of anæsthetics, and it is remarkable that for some considerable time a large section of the medical profession was opposed to the use of inhaled anæsthetics.

It was another dentist, Thomas W. Evans of Paris, who introduced nitrous oxide to Europe; he encountered much opposition from English anæsthetists, led by Richardson, but eventually had the satisfaction of seeing it in general use.

It is not my intention to enlarge on the developments in general anæsthetics, save to say that many of the improvements, combinations of gases and techniques for administration were developed by dentists and in dental hospitals. As, for example, in 1896, a dentist in Hildesheim called Thiesing observed that while spraying the gums of patients with ethylchloride to produce local anæsthesia several of them became unconscious. He experimented with its use as a general anæsthetic, and it became popular with a number of dentists, and was subsequently used in major surgery.

During this latter period advances were made in the production of local anæsthesia by injection. Cocaine or Stovaine were used, and although the addition of adrenaline as a limited factor was helpful, it was still unsatisfactory and dangerous, and it was not until 1905, when Professor Baun introduced novocaine, that a reliable substitute was found.

An Army surgeon, Harvey S. Cooke, is credited with first having the idea of using anæsthetic solutions in cartridge form. This idea he gained from observing rifle cartridges; he made his own brass syringe and his own cartridges from glass tubing, with India rubber from pencils as stoppers. Today the number of cartridges used by dentists annually would reach from here to Moscow and back again, if placed end to end.

Following suggestions put forward in 1901 by William Hunter that infection at the apex of a tooth might be responsible for many diseases, the idea was eagerly seized upon by the medical profession, as a solution to problems which had hitherto baffled them, and there arose a degree of co-operation between doctor and dentist, which deprived vast numbers of people of their teeth without much improvement to their physical condition. So much from so many, with so few good results. More light has largely exploded this theory. At the same time, the introduction of X-rays raised a considerable amount of diagnosis from conjecture to certainty.

What, then, is the present position of dentistry? And what is its relationship to medicine in this country?

The advent of the National Health Services and the entrance of the State as a large-scale employer, had a profound affect upon both medicine and dentistry. The original terms of the Act were vigorously opposed by both professions, and there are many today who still think it was too arbitrary, too abrupt, and ill judged in some of its applications.

Before the Act dentistry was not popular, either from the point of view of the numbers entering the profession or from that of the general public. The amount of dental attention needed by a community is very different from the amount it is prepared to pay for, but it was soon evident that the lure of something for nothing, even dentistry, was irresistible, and the comparatively small profession was swamped by an avalanche of demands for treatment.

In spite of this, apart from the years immediately after the War, when there were a great number of ex-Service students, the various schools were not filled, and the number of dentists to meet the requirements of the public remained inadequate. That position has completely changed, as far as the schools are concerned, for they are now full. Indeed, as Professor Biggart stated in a recent letter, he has twice as many applications as he can take, and the same is true of most other schools. The shortage now is accommodation, and it is an astonishing fact that, over ten years after the introduction of the Act, there is as yet no new dental school in the United Kingdom, although some have been enlarged, and we here in Belfast hope to have a new Dental Hospital—sometime.

About the time of the introduction of the Act, the Teviot Committee was set up to consider dental affairs, and very recently the McNair Committee, which was to deal especially with dental recruitment. If you will forgive me, I would like to quote a few of the figures which no doubt influenced their findings:—

At the end of 1938 the total number on the Dental Register was 14,722.

In 1948, ten years later, the number was 14,909.

In 1958, ten years later, again, the number was 15,922.

The number added to the Register in 1958 was 672, which included 207 of foreign and Commonwealth origin. The number of names removed from the Register in that year was 1,019, so that in 1958 there was a loss of approximately 450. This loss can be partly explained by two facts, Firstly, that when the Register was opened in 1921 almost 8,000 new names were added, most of whom were in their twenties. Many of these have gone through death or retirement, but there are still 2,000 of the 1,921 entrants remaining, and it must be expected that they too will cease to practise within the next few years. Secondly, 1958 was the first year in which full benefit of superannuation under the National Health Services Act could be obtained.

To meet these losses and to build up the profession to the required numbers the Teviot Committee recommended an annual intake of 800 and the McNair Committee 900 plus, but the total capacity intake of the schools at the present moment is only 640. Through the legacy which has come down to us almost all application for staff, money or buildings are made through bodies largely dominated or controlled by doctors, and since there is only a limited amount of money available, some members of these bodies may have felt that what money there was could be more advantageously spent on medicine. This is an understandable view, but one which did not greatly assist in producing more dentists, and it is impossible to do this, unless we have more training centres and existing ones are enlarged.

This, however, is not so simple as one might imagine, as it has been shown that an efficient and economic training centre to turn out say 35/40 qualified students each year, as well as the material buildings and equipment, requires a population centre of 4/500,000, and also a very considerable and experienced teaching staff, and teachers too need training.

It is here, perhaps, that the dental profession feels a little disappointed. Incidentally, our own new hospital, which was originally planned for 50,000 square feet, with an output of 35, is now to be 31,000 square feet, with an output of 25.

The present position is that we have too many patients chasing too few dentists, a state of affairs which I do not think is in the best interests of any profession.

What, then, is the present relationship of the medical profession to dentistry? I give it respectfully and regretfully, as my personal opinion, that the medical profession is not greatly interested in dentistry, and the reason is partly of our own making. The advances in clinical procedure, operative skill, and local anaesthesia, and the perfection of replacement, have been in a large sense our own undoing. Dr. A. has passed the time of life when caries is prevalent; many of his teeth are satisfactorily filled, and those beyond filling removed. He functions quite well. Dr. B. always had good teeth, and very little trouble. Dr. C. had his removed years ago, and excellent dentures substituted. They look well, and he can eat anything, his only trouble being—raspberry jam. They do not consider that dental caries is much more than a distressing local condition, which can be adequately treated. They might consider the position more practically, if they remember that the control of dental caries would take at least one shilling, if not one and sixpence off the income tax.

Is there a cure for dental caries, and, if not, how can the medical profession co-operate?

There is no specific cure that we know of, but we do know of several limiting factors. The high incidence of caries has always followed certain habits of diet, rich food, raw sugar, increased carbohydrate. As I mentioned earlier, the incidence amongst the Eskimoes is only 2 to 3 per cent., and they are largely flesh-eating. Caries fell in this country with restriction of sugar during the War. It can be reduced, as shown by an experiment carried out amongst children in orphanages in Glasgow. If we limit the number of times during the day in which food is taken to three, and cut out all sweets and sugar drinks, etc., between meals, the incidence will fall. If caries in children and adolescence is systematically treated at an early age, and if all water supplies were to contain one to two parts per million of fluorine (Belfast water contains fluorine 0.1 parts per million, calcium 4.0), and if children had more milk and fruit and less sweets, cakes and iced lollies, caries would, I believe, be greatly reduced.

The descendants of the "Bounty" mutineers were practically caries free when rediscovered; but the addition of raw sugar and refined white flour to their diet soon reduced subsequent members of that community to the general level found in most countries.

There is also a school of thought which holds that, if we lived on foods grown where the ground is fertilized by natural manures and compost, and animals fed on such foods, we would suffer less illness, have better hair, better skins, better teeth and more children. I am assured, however, by all to whom I have spoken that a radical change in diet is out of the question—and indeed the result of a recent experiment carried out in Norway would go to prove this.

But, nevertheless, I believe that the medical profession, and particularly the general practitioner, has still the greatest influence on mothers, relative to the children's health and well-being, and if he were to convince young mothers of the advantages accruing to their children from properly regulated diet and early and continuous dental attention there would be much improvement in succeeding generations.

But most doctors and dentists prefer to float serenely on a sea of self-satisfied complacency, and this, ladies and gentlemen, is where we came in. Dental affections are probably the oldest and certainly the most widespread ailments to which the human race is subject.

REVIEW

DISEASES OF THE NOSE, THROAT AND EAR. By I. Simson Hall, M.B., Ch.B., F.R.C.P.E., F.R.C.S.E. Seventh Edition. (Pp. xii+467; figs. 85; plates 8. 21s.) London and Edinburgh: E. & S. Livingstone, 1959.

THE author points out very clearly in the preface to the first edition that this book is intended firstly as a text-book for the student of otolaryngology and, secondly, as a quick book of reference for the general practitioner.

It covers the whole range of the speciality clearly, each condition being of necessity treated briefly, but none the less thoroughly.

The more complicated and highly technical methods of investigation and treatment are mentioned, so that the practitioner can easily ascertain what can be done to treat a particular disease.

Its great value lies in the fact that it emphasizes those procedures which can be carried out by the general practitioner, and mentions without any detail those which can not—it makes clear the limitations of treatment possible or desirable in general practice.

The seventh edition has been brought up to date, and the newest methods have been included.

It is one of the best books of its kind for thoroughness, simplicity and accuracy in its own particular sphere.

F. A. MAC.L.